

Appl. No. 09/667,434
Amendment dated 14 November 2006
Reply to Office Action of August 17, 2006
Atty. Docket No. AP628US

REMARKS/ARGUMENTS

Claims 1 - 24, 30 - 32, 38 - 55, and 65 - 75 are pending in the application.

Claims 25 - 29, 33 - 37 and 56 - 64 have been cancelled without prejudice.

Claims 2 - 24, 30 - 32, 38 - 55, 65 and 68 - 75 have been allowed.

Claims 1, 66 and 67 stand rejected.

In the office action mailed August 17, 2006, claims 1, 66 and 67 were rejected under 35 U.S.C. 103(a) as unpatentable over US 6,389,139 (Curtis *et al.*) in view of US 5,406,634 (Anderson).

The rejection is respectfully traversed on the grounds that the examiner has failed to establish a proper *prima facie* case of obviousness. (*In re Rijckaert*, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993); *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Bell*, 991 F.2d 781, 782, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993)).

As explained in a previous response, the present invention is concerned with multi-zone audio systems or entertainment centres comprising an audio distribution unit for driving several sets of loudspeakers in different zones, such as different rooms of a house. Such systems are known which have a remote control unit in each zone for controlling the central audio distribution unit.

As stated in applicant's specification, in the passage extending from page 1, line 27 to page 2, line 3:

A disadvantage of such systems is that each keypad unit is connected to the audio distribution unit by a multi-conductor cable which comprises some conductors for exchanging control signals between the remote keypad unit and the audio distribution unit, and others for supplying power from the audio distribution unit to the remote keypad unit. It is expensive to provide such multi-conductor cabling for every keypad, and such expense is especially unacceptable when adding remote control to an existing multi-zone loudspeaker system, which usually would require installation of *multi-conductor cables in addition to existing two-conductor loudspeaker cables*. (Emphasis added)

With such an arrangement, there would be four conductors (two wires to each loudspeaker) for conveying audio signals to the two loudspeakers, plus a plurality of other conductors for conveying power and control signals to the remote control. As explained, this is not acceptable, especially when "retro-fitting" remote control to an existing multi-zone loudspeaker system in which the loudspeakers in each remote location (room) are connected to the audio distribution unit by only four conductors.

In addition, it is undesirable to supply power to the loudspeakers locally because that would usually entail providing a power transformer and associated circuitry in the loudspeaker cabinet, increasing cost significantly. It is usually more economical to provide a power supply at the central audio distribution unit and distribute power to the remote loudspeakers.

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The present inventor addressed the problem by conveying power and audio signals to each set of loudspeakers, and digital data signals from the remote control to the audio distribution units, using only the usual four conductors. This is reflected in the wording of claim 1 of record which reads as follows:

1. Apparatus comprising an audio distribution unit (10) having
means (11) for providing audio signals from audio sources and output ports (12A...12D) for supplying sets of audio transducers,
each said set comprising at least a first audio transducer (14A(L)) and a second audio transducer (14A(R)) and having associated therewith at least one remote unit (34A)
for controlling the audio distribution unit by means of digital data signals,
the first and second audio transducers (14A(L),14A(R)) and the remote unit (34A) being connected to the audio distribution unit (10) by a set of four conductors,
the apparatus further comprising
means (22A...22D, 44, 76, 80-96) for
supplying *audio signals* to each of the audio transducers (14A(L),14A(R)) by way of a respective *pair of said four conductors* and
transferring *power* and said *digital data signals* between said audio distribution unit (10) and said remote unit (34A) by way of at least *two of said four conductors*.
(Emphasis added)

Thus, there need be only four conductors connecting the two audio transducers (loudspeakers) and the remote unit to the audio distribution unit. These same four conductors, and only these four conductors, convey (i) the LH audio signal to the LH loudspeaker, (ii) the RH audio signal to the RH loudspeaker, (iii) power for the remote unit and (iv) digital data to/from the remote unit. Contrary to the examiner's assertions, the disclosures by Curtis *et al.* and Anderson, whether taken individually or in combination, neither disclose nor suggest such a "four-wire" system.

On pages 2 and 3 of the office action, the examiner paraphrased features of present claim 1 and purported to identify corresponding features in the disclosure by Curtis *et al.* With all due respect, the statement "and transferring power and data signals (col. 18, lines 15-34) between said audio distribution unit, by way of at least two of said four conductors (power on 22 and 12 and audio data on 24 and 26)" is not correct. Lines 24 to 28 of the passage quoted by the examiner read "To achieve such control, *data ports* would be provided on the signal conditioners 14 or the volume controls 20. Connecting to the data port is a *data control line* from the computer or electronic control". (Emphasis added).

Thus, contrary to the examiner's assertion, Curtis *et al.* propose to communicate digital data by way of a separate data link. This separate data link will comprise several additional conductors in parallel with the four conductors 12, 22, 24 and 26.

It is also submitted that there is nothing in Curtis *et al.* to motivate the skilled addressee to dispense with several conductors and transmit power, audio and digital data signals using only four

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conductors. Indeed, instead of teaching the desirability of conveying everything via only four conductors, the suggestion by Curtis *et al.* to add data ports (e.g., RS-232) to each of the signal conditioning units 14 and volume controls 20, thereby requiring several more conductor in addition to the four conductors 12, 22, 24 and 26, actually leads away from the present invention, which requires no more than four conductors.

It is also submitted that there is nothing in Anderson's disclosure to motivate the skilled addressee to take parts of his "intelligent speaker" system and add them to Curtis *et al.*'s system. It follows that the reasons given by the examiner for combining the apparatus disclosed by Curtis *et al.* and Anderson must have been based upon hindsight culled from reading the present applicant's disclosure.

Anderson's system comprises what amounts to a computer network controlling very complicated and expensive intelligent speaker units 22 (Figure 2) from a central hub or node. Computers (32) in the speaker units 22 receive digital audio and control signals transmitted to them by a computer 10 in a central audio distribution unit (10-20) by way of a first transmission line 24, which is actually a data bus over which the audio distribution unit 10-20 broadcasts the digital audio and control signals for all of the speaker units 22. Each "intelligent" speaker unit 22 detects its own digital signals, and processes them to produce a speaker drive signal, which is amplified by a local audio power amplifier 37. Power for the speaker 39 and the external control display 41 is derived from the "power supply" which is connected to the "local power line". Thus, the power for driving the "remote unit" is not supplied by the central audio distribution unit 10-20.

The transmission line 24 must comprise at least two conductors. Likewise, the local power line must comprise at least two conductors. The passage at Col. 5, lines 1-11 cited by the examiner states that "Transceiver 47 is provided with return link 26, whereby the remote console 41 and the central computer 10 might exchange control information or status." The "return link 26" also must comprise at least two conductors. Hence, Anderson's system requires at least six conductors to provide the same functionality as the system defined in applicant's claim 1, which requires only four conductors.

It is also submitted that a person skilled in this art, seeking a solution to the problem of conveying power, audio and digital data signals between a central audio distribution unit and remote loudspeakers would not look to Anderson's disclosure for help because Anderson's central distribution unit 10...20 does not convey power to the speakers. Instead, each of Anderson's speaker sets obtains its power locally.

Nothing in Anderson's disclosure suggests the desirability of conveying power, audio signals and digital data signals by way of four conductors only. To the contrary, Anderson teaches the addition of a separate data link 26 to provide for communication between his intelligent speakers 22 and the central control computer 10, which definitely does not suggest the desirability of transmitting power, audio signals and digital data signals over the same four conductors.

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Another reason a skilled addressee would not be motivated to combine Anderson with Curtis *et al.* is that Anderson's system is a sophisticated networking system using digital audio signals to drive locally-power speakers 22, each of which requires two communications receivers, a DSP and other components, whereas Curtis *et al.*'s system uses more conventional analog audio signals and conventional loudspeakers. A skilled addressee would be unlikely to try combining two such disparate systems. Even if he did, he would be faced with the problem that Curtis *et al.*'s speakers were not "intelligent" enough, and the resulting system would require more than four conductors to convey power, audio signals and digital data.

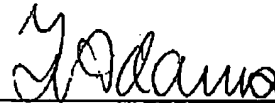
Accordingly, the rejection of claim 1 as obvious over Curtis *et al.* and Anderson is untenable and should be withdrawn.

Each of claims 66 and 67 is dependent upon claim 1 and so includes all of its limitations. It follows that the rejection of claims 66 and 67 as obvious is untenable for the same reasons as claim 1, and the rejection should be withdrawn.

In view of the foregoing, it is submitted that all extant claims are patentable and the applicant respectfully requests withdrawal of the rejection of claims 1, 66 and 67 and early and favourable reconsideration and allowance of the application.

With a view to expediting allowance, the examiner is invited to call the undersigned at (613) 254 9111 if he has any further concerns.

Respectfully,



Thomas Adams, Reg. No. 31078